

# PATENT ABSTRACTS OF JAPAN

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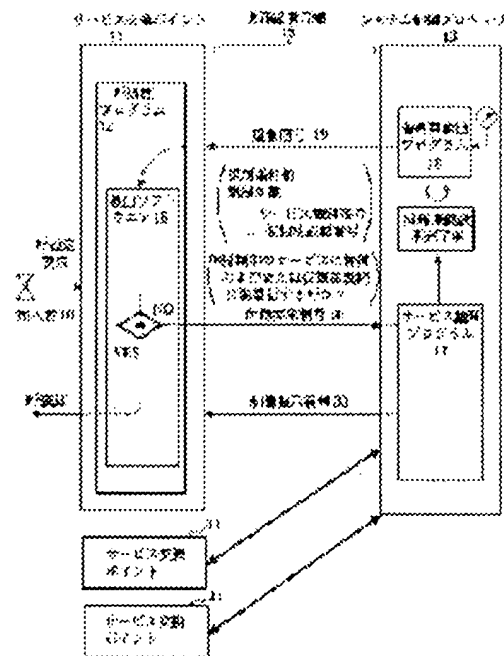
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## (54) EXCHANGE CONNECTION CONTROL SYSTEM

### (57)Abstract:

PURPOSE: To precisely perform call regulation in an intelligent network.

CONSTITUTION: The number of calls to be simultaneously connected related to any specified service or the incomplete rate of calls related to any specified virtual private network is counted and service, for which these values exceed threshold values, and/or the call related to the virtual private network is abandoned at a service exchange point 11 before it arrives at a system control processor 13. Thus, automatic regulation can be early started, influences to other service or other customers is suppressed at a minimum, and the quality of service to these customers can be improved.



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CLAIMS

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[Claim(s)]

[Claim 1] Or it sets to the switching control system equipped with two or more service switch points which switch a virtual private network, and the system control processor which controls this service switch point through a communication network. a subscriber terminal and various kinds of services -- and -- said system control processor -- said service -- and -- or utilization of said virtual private network -- and -- or with a means to measure traffic about each classification response of a private network It has a means to set up a threshold about this traffic, respectively, and a means to transmit a regulation signal to said service switch point about the traffic beyond this threshold. Said service switch point is a switching control system characterized by having a means to reject each demand call according to this regulation signal.

[Claim 2] Said traffic is a switching control system according to claim 1 which is the number of the calls simultaneously connected about said various kinds of services, and is the non-completion ratio of the call which carries out sending and receiving about utilization of said virtual private network.

[Claim 3] Said threshold is a switching control system according to claim 1 set up according to an individual about said various kinds of services.

[Claim 4] Said threshold is a switching control system according to claim 1 set up according to an individual about utilization of said virtual private network.

[Claim 5] Said threshold is a switching control system according to claim 1 by which modification setting out is carried out accommodative in accordance with service criteria.

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention is used for an intelligent network. Especially, it is related with the overload control technique of a system control processor.

[0002]

[Description of the Prior Art] The call regulation in an intelligent network is regulating the call in connection with service or a virtual private network in a system control processor (SCP), and performing automatic overload control of a system control processor. By the conventional call regulation method in an intelligent network, by restricting, when the overload condition of itself or arrival-of-the-mail place airraid congestion is detected in a system control processor, and sending out a regulation signal from a system control processor to a service switch point (SSP), the call was discarded in the service switch point and the load which joins an intelligent network was mitigated. For example, refer to JP,61-210751,A.

[0003] In this conventional call regulation method, regulation of only the call which is going to receive a message in airraid [ specific ] by service which all the calls that are going to receive the service which an intelligent network offers, or intelligent networks offer is possible.

[0004]

[Problem(s) to be Solved by the Invention] however, eye flume float which only the call about the private network which the specific service or the specific customer who narrows down the target for regulation and causes an overload if the service offered by the intelligent network makes it various and an intelligent network comes to be concerned with the call connection in a virtual private network is using is eliminated, and continues this about the call connection to other services or other customers -- fine processing is needed. In the conventional intelligent network, the target for call regulation was not able to be specified finely in this way.

[0005] By being carried out to such a background and preparing the fine target for call regulation, for every customer who employs every specific service and a specific specific virtual private network, this invention performs automatic regulation at an early stage, and aims at offering the switching control system which can limit the effect of other services or the customer on others to minimum.

[0006]

[Means for Solving the Problem] a subscriber terminal and service of various kinds [ this invention ] -- and -- or it is the switching control system equipped with two or more service switch points which switch a virtual private network, and the system control processor which controls this service switch point through a communication network.

[0007] The place by which it is characterized [ of this invention ] here said system control processor said service -- and -- or utilization of said virtual private network -- and -- or with a means to measure traffic about each classification response of a private network It has a means to set up a threshold about this traffic, respectively; and a means to transmit a regulation signal to said service switch point about the traffic beyond this threshold. Said service switch point is in the place equipped with a means to reject

each demand call according to this regulation signal.

[0008] Said traffic is the number of the calls simultaneously connected about said various kinds of services, and it is desirable about utilization of said virtual private network that it is the non-completion ratio of the call which carries out sending and receiving.

[0009] As for said threshold, it is desirable to be set up according to an individual about said various kinds of services.

[0010] As for said threshold, it is desirable to be set up according to an individual about utilization of said virtual private network.

[0011] As for said threshold, it is desirable to carry out modification setting out accommodative in accordance with service criteria.

[0012]

[Function] collecting and carrying out counting of the number of cocurrent connection of the call which has received specific service, and the non-completion ratio of the connection call in a specific virtual private network with a system control processor -- each service -- and -- or the overload condition generated for every virtual private network is detected automatically.

[0013] That is, when these values exceed the threshold defined beforehand, it is judged as that by which the resource relevant to corresponding service or a corresponding virtual private network was put on the congestion condition. consequently, the call which is going to start the specific service which serves as a target for regulation from among the calls which are going to require intelligent network control in the service switch point which sent out the regulation signal which contains the identifier of the service which is a target for regulation, or a virtual private network from a system control processor, and received this or the call which is going to send or receive a message within the specific virtual private network used as the target for regulation -- an OFF division -- this rejects.

[0014] By early call regulation in such a service switch point, the load of the service in a congestion condition or a virtual private network can be mitigated, and the effect affect others can be suppressed to the minimum.

[0015]

[Example] The configuration of this invention example is explained with reference to drawing 1 and drawing 2. Drawing 1 is the block block diagram of this invention example equipment. Drawing 2 is the conceptual diagram showing the whole this invention example configuration.

[0016] This invention is the switching control system equipped with two or more service switch points 11 of the subscriber terminal 10 and various kinds which reach service 30 or switch a virtual private network 40, and the system control processor 13 controlled through the common-channel-signalling network 12 by using this service switch point 11 as a communication network.

[0017] The place by which it is characterized [ of this invention ] here a system control processor 13 The means which carries out counting of the call connected simultaneously to one services A, B, --, Z about each of service 30, The service logic programming 17 equipped with the means which carries out counting of the non-completion ratio of the call which carries out sending and receiving to one virtual private networks a, b, --, z about each of a virtual private network 40, counting of the means which carries out counting of said call -- with a means to set up the threshold m in comparison with a result It has a means to set up the threshold n in comparison with a result. counting of the means which carries out counting of said non-completion ratio -- counting of the means which carries out counting of said call -- the time of a result exceeding said threshold m -- and -- or counting of the means which carries out counting of said non-completion ratio -- the time of a result exceeding said threshold n -- the service switch point 11 -- this threshold m -- and -- or the service A beyond a threshold n -- It has the overload detection program 18 equipped with a means to send out B, --, the regulation signal 19 that it Z Reaches [ signal ] or makes the call to virtual private networks a, b, --, z reject. The service switch point 11 It is in the place equipped with said services A and B which threshold m Reached or exceeded the threshold n, --, the detection software 15 equipped with a means to Z Reach or to reject the call to virtual private networks a, b, --, z, according to this regulation signal 19.

[0018] Next, actuation of this invention example is explained. starting of the service 30 which the call

under processing offers into the existing call processing program 14 in the service switch point 11 in an intelligent network -- and -- or the detection software 15 which judges whether it is what performs the sending and receiving to a virtual private network 40 is incorporated. Specifically, it has judged whether an intelligent network is concerned with connection processing of the call based on the figure which the subscriber dialed, or a subscriber's service subscription information. When you need the offer function of an intelligent network as a result of a judgment, the activate request signal 16 notifies that to a system control processor 13.

[0019] On the other hand, there is service logic programming 17 in a system control processor 13, and when the service activate request signal from the service switch point 11 is received, an intelligent network is offered by sending out the control-lead signal 20 of a call to the service switch point 11 based on this program.

[0020] In this invention, if it is Services A and B, --, the number of cocurrent connection of the call which has received that service in every Z and virtual private networks a and b, --, the call that carries out sending and receiving into z in this service logic programming 17, counting of that non-completion ratio is carried out. These enumerated data are inspected synchronous by the overload detection program 18 established independently [ the service logic programming 17 ]. consequently, the threshold m as which these values were determined beforehand -- and -- or the time of exceeding n -- the specific services A, B, --, Z -- and -- or the number which identifies virtual private networks a, b, --, z, and the regulation signal 19 which includes a regulation condition value (regulation time amount, regulation level) as a parameter are sent out to the service switch point 11.

[0021] It discards in the service switch point 11, without identifying by the detection software 15 which described previously the call which is going to start the specific services A, B, --, Z which serve as a target for regulation according to that condition or the specific virtual private networks a and b, --, the call that is going to carry out sending and receiving within z, and sending out an activate request signal to a system control processor 13 to these calls, after registering this content of regulation.

[0022] Next, with reference to drawing 3, the overload detection procedure in a system control processor 13 is further explained to a detail. Drawing 3 is a flow chart which shows an overload detection procedure. If a call arrives at the service logic programming 17 (S1), the call will judge the call using service 30, and the call using a virtual private network 40 (S2). If it is the call which carries out sending and receiving to a virtual private network 40, counting of the non-completion ratio of the call which carries out sending and receiving to the same virtual private networks a, b, --, z will be carried out (S3). Moreover, if it is the call which receives a message in service 30, counting of the number of cocurrent connection of the call which has received the same services A, B, --, Z will be carried out (S5). Each of these enumerated data are transmitted to the overload detection program 18. When the non-completion ratio to virtual private networks a, b, --, z exceeds a threshold n, in the overload detection program 18 (S4), And when [ or ] the number of cocurrent connection of the call to Services A, B, --, Z exceeds a threshold m (S6), the service switch point 11 -- receiving -- a regulation condition value (regulation time amount, regulation level) and a service identification number -- and -- or a virtual private network number sends out the regulation signal 19 included as information (S7). the services A, B, --, Z while the call which comes from the subscriber terminal 10 is, in response, regulating the detection software 15 of the service switch point 11 -- arrival of the mail -- and -- or it judges whether they are virtual private networks a, b, --, z, and the corresponding call is rejected.

[0023] The value of thresholds m and n is a threshold m1, and m2, --, mZ according to an individual about each of Services A, B, --, Z and virtual private networks a, b, --, z, although it explained that service 30 and a value respectively uniform about a virtual private network 40 were set up in this invention example. And a threshold m1, and m2, --, mz It can also set up. Moreover, thresholds m and n can also be beforehand set up after consulting with a subscriber by the agreement.

[0024]

[Effect of the Invention] As explained above, according to this invention, by preparing the fine target for call regulation, the thing which employ every specific service and a specific specific virtual private network and for which automatic regulation is performed at an early stage for every customer can

become possible, the effect of other services or the customer on others can be limited to minimum, and the quality of service to these can be raised.

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing\_1] The block diagram of this invention example equipment.

[Drawing\_2] The conceptual diagram showing the whole this invention example configuration.

[Drawing\_3] The flow chart which shows an overload detection procedure.

[Description of Notations]

10 Subscriber Terminal

11 Service Switch Point

12 Common-Channel-Signalling Network

13 System Control Processor

14 Call Processing Program

15 Detection Software

16 Activate Request Signal

17 Service Logic Programming

18 Overload Detection Program

19 Regulation Signal

20 Control-Lead Signal

30 A, B, --, Z Service

40 a, b, --, z Virtual private network

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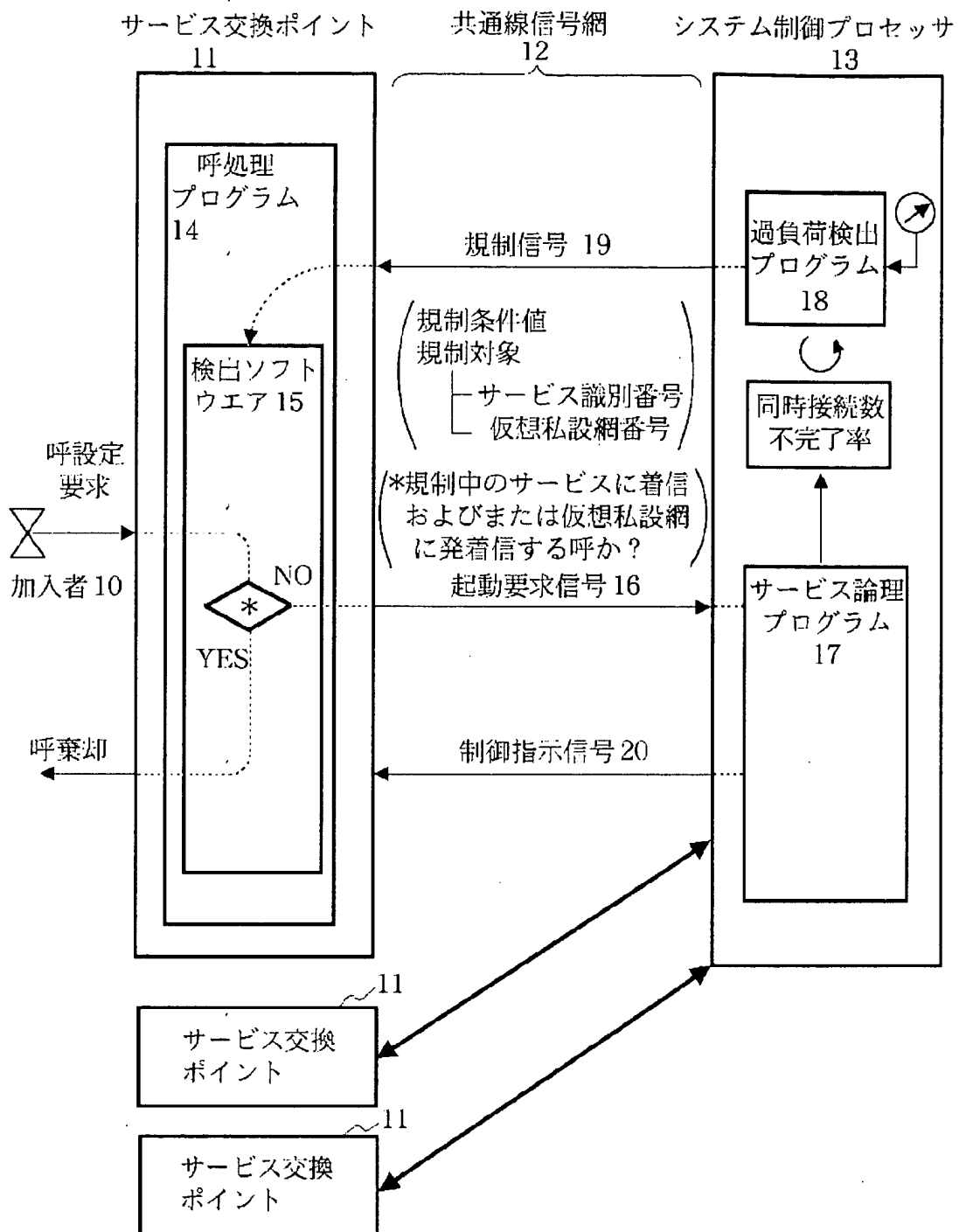
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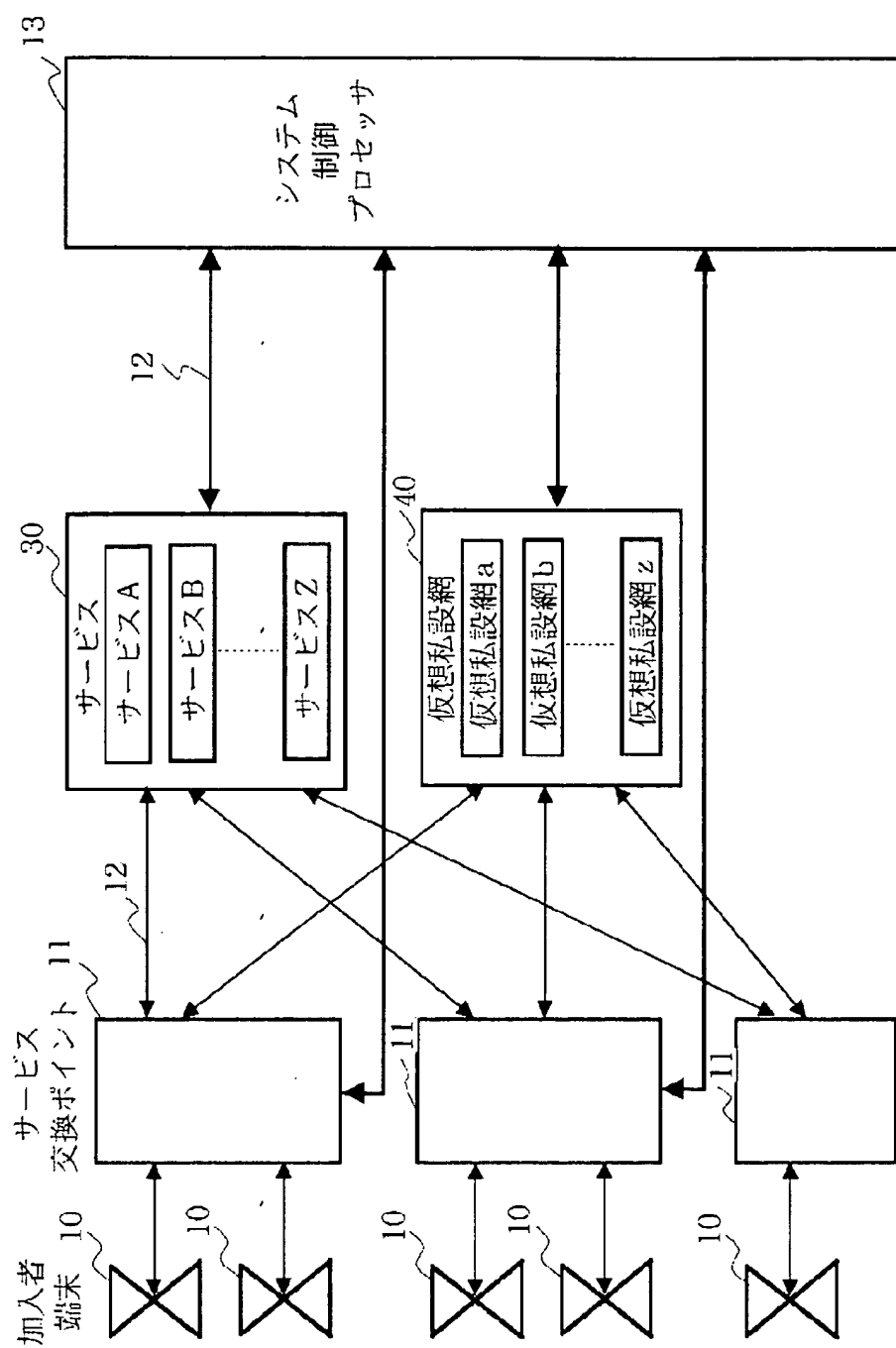
DRAWINGS

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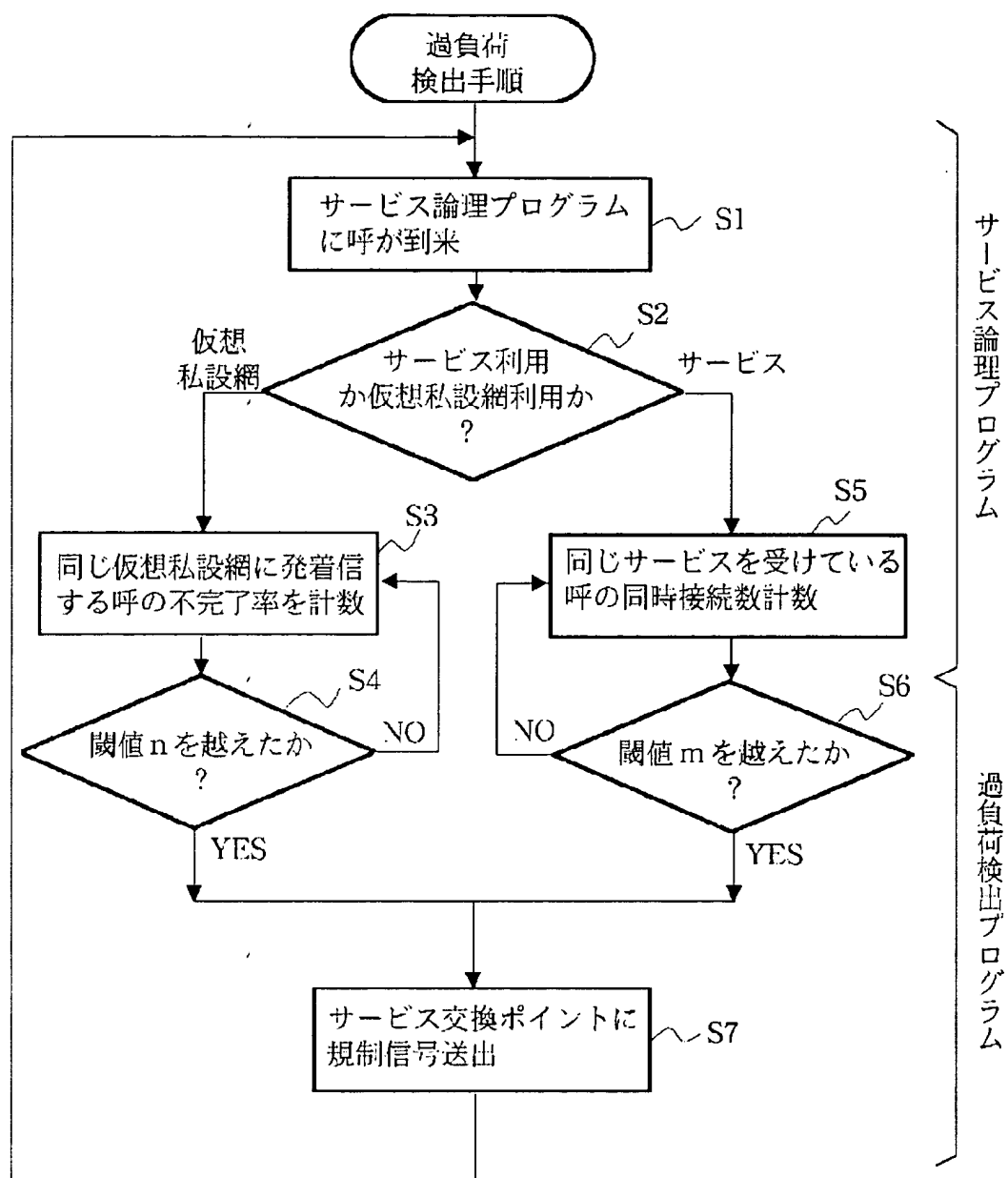
[Drawing 1]



[Drawing 2]



[Drawing 3]



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